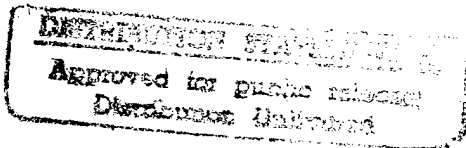


**NAVAL WAR COLLEGE**  
Newport, Rhode Island

**FORCE XXI: JTF IMPLICATIONS**

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Joint Military Operations course of study.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College of the Department of the Navy.

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## **Abstract of**

### **FORCE XXI: JTF IMPLICATIONS**

Force XXI provides not only the Army but the entire force with leap ahead technology that will catapult it into the 21st century. The speed and accuracy of the information from the foxhole to the commander will have significant ramifications throughout every phase of the battlefield. This breakthrough technology has only begun to be fully implemented within the Defense Department. The joint commander will be faced with many challenges in conducting war and peace operations in the future.

As the military becomes smaller and resources more constrained the joint force will become the dominant package of force deployment. With emerging technologies throughout the services, especially Force XXI, it will make it hard for the joint force commander to lead the forces without a consolidated service effort. The effort begins with an easily understood and combined doctrine in which to command the task force.

Force XXI is the bridge that will span the gap of technology as we maneuver into the 21st century. However, caution must be exhibited in regards to information technology. Anything short of a consolidated effort of jointness will erode the full impact of Force XXI's potential.

## **INTRODUCTION**

The Army is in the process of developing a futuristic system that enables the leader to gain information accurately with timely shared images of the battlespace. This new system is called Force XXI.

Force XXI will give the Army an increased ability to gain knowledge in knowing where the enemy is and what he is doing. Clearly an edge to the Army, but what about the impact to the other services in a joint task force? If one service has advanced technology that is not commonly shared with the other services it clearly puts the commander in a difficult situation when coordinating joint operations. This paper addresses three issues that have serious implications regarding a joint task force (JTF); doctrine, command and control, and resource interoperability. However, before discussing the joint task force implications some background and definitions associated with Force XXI need to be established.

**What is Force XXI?** Force XXI is the result of numerous changes the Army has gone through in the past decade. The real drivers of recent change in the Army are threefold: a changing world order, diminishing resources that are stretched to the limit and the power of the computer and microprocessor.<sup>1</sup> Force XXI is the Army's answer to these drivers.

Force XXI is the Army's concept of capturing the latest technological advances in the industrial base and using them to gain superiority against the enemy. It allows the US to gain information dominance, shape the battlespace, and conduct decisive operations, all with a minimal footprint. The central and essential feature of a Force XXI Army will be its ability

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<sup>1</sup> Eric R Wildemann, LTC U.S. Army, "Force XXI, The National Strategy and Joint Operation: Are they in Sync?" U.S. Army War College, 2 June 1995, p. 1

to exploit information.<sup>2</sup> Correspondingly, Force XXI is based on five characteristics: doctrinal flexibility, strategic mobility, tailorability and modularity, joint and multinational connectivity, and the versatility to function in war and military operations other than war (MOOTW).<sup>3</sup>

In the recently published Joint Vision 2010, General (GEN) Shalikashvili, CJCS, said "We must have information superiority: the capability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same".<sup>4</sup> In addition, GEN Sullivan, CSA, and founding father of Force XXI, wrote "Winning the information war is not simply about intelligence, nor is it about data transmission. It is about integration. It is about taking the information that is available to any given soldier and making it available to whoever needs it."<sup>5</sup>

With any new introduction of technology there is bound to be misconceptions of what it does. Force XXI can never remove the friction and fog of war, but it could minimize it through time and proper usage of this technology. It will not replace the service member in the fighting position or replace the leadership to make the command decisions, nonetheless, Force XXI is our leadership's answer to address the changing world that effects our military. In short, the introduction of sensors, precision weapon systems, and information based systems is the Army's answer to dwindling resources.

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<sup>2</sup> Headquarters, U.S. Army, "What is FORCE XXI," no date, available online: <http://204.7.227.75/f21what.html/>.

<sup>3</sup> Headquarters, U.S. Army Training and Doctrine Command. Force XXI Operations TRADOC Pamphlet 525-

5. Ft Monroe, VA: TRADOC, 1 Aug 1994, Ch 3, p. 1

<sup>4</sup> Chairman of the Joint Chiefs of Staff. Joint Vision 2010 no date, p. 16

<sup>5</sup> Gordon R Sullivan, GEN U.S. Army, "A Vision for the Future," Military Review, May-June 1995, p 8.

The method of deployment for this new technology has yet to be determined. Some military traditionalists have it embodied in the structure of an organic division while some new thinkers feel that the brigade is better tailored to handle it. The one misconception that Force XXI universally causes is that on some date in the future all the technology will be fielded and the integration of change will be over. Much to the contrary, Force XXI is a mind-set and an orientation rather than an end product of the present process of change. It was never designed to be something around which we wanted to pour a lot of concrete and let that be it forever.<sup>6</sup>

**How is it Employed?** Another misconception is that Force XXI is integrating joint issues at the same time it is working service issues. Army Force XXI proponents and agencies understand the requirements for joint capability.<sup>7</sup> However, it also appears that there is no overarching joint integration mechanism for Force XXI, nor are the four services operating from a joint modernization concept or directive.<sup>8</sup>

The Army is leading the other services in the modernization effort.<sup>9</sup> It is attempting to become the proponent for integrating Force XXI into the joint arena. The Training and Doctrine Commands' (TRADOC) attempt at joint integration is called Joint Venture. Joint Venture is a partnership with members of the Army major commands (MACOMS) and the army staff (ARSTAF) to design the operating forces from the foxhole to echelons above corps (EAC).<sup>10</sup> While the Army has made an honest attempt to adhere to the letter of

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<sup>6</sup> Ibid. p 8.

<sup>7</sup> Eric R Wildemann, LTC U.S. Army, "Force XXI, The National Strategy and Joint Operation: Are they in Sync?" U.S. Army War College, 2 June 1995, p. 17.

<sup>8</sup> Ibid. p. 17

<sup>9</sup> Ibid. p. 17.

<sup>10</sup> Headquarters, U.S. Army, "Force XXI Campaign Plan," no date, available online: <http://204.7.227.67/f21camp.html/>. p.3

jointness, it is not clear that jointness is firmly embedded in its collective consciousness, nor does it appear to be as firmly embedded into the design and structure of Force XXI as it should.<sup>11</sup> In a general statement, the CJCS, GEN John M. Shalikasvili, accused the services of doing the easy things to become more joint, but not doing the hard things.<sup>12</sup> Clearly Force XXI falls into that category.

As mentioned before, Force XXI must be viewed as work-in-progress and not some fixed end product that will solve all the services answers. Obviously with Force XXI being at the infant stage there is much room for improvement from cultural thinking to joint integration, but the journey will be arduous. Evolving information technologies will almost undoubtedly unlock the full potential of Force XXI operations, but we must begin now to change the way we think and organize staffs, information flow, procedures, and possibly organizations.<sup>13</sup> To simply to retain our effectiveness with less redundancy we will need to extract every ounce of capability from every available source.<sup>14</sup> That outcome can only be accomplished through a more seamless integration of service capabilities.<sup>15</sup> Perhaps the greatest challenge to fielding Force XXI is the continued dramatic cultural change envisioned by the Army of the 21st century.<sup>16</sup> One thing can be certain, Force XXI is our future and the

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<sup>11</sup> Eric R Wildemann, LTC U.S. Army, "Force XXI, The National Strategy and Joint Operation: Are they in Sync?" U.S. Army War College, 2 June 1995, p. 17.

<sup>12</sup> Ibid. p. 19.

<sup>13</sup> Headquarters, U.S. Army Training and Doctrine Command. Force XXI Operations TRADOC Pamphlet 525-5. Ft Monroe, VA: TRADOC, 1 Aug 1994, Ch 3, p. 16

<sup>14</sup> Chairman of the Joint Chiefs of Staff. Joint Vision 2010 no date, p. 8.

<sup>15</sup> Ibid. p. 9

<sup>16</sup> James E. Sikes, Jr, LTC U.S. Army, "Battle Command and Beyond: Leading at the Speed of Change in the 21st Century", 29 March 1995, available online: <http://204.7.227.75:443/force21/articles/battle/battle11.html>. p.7

future force looks joint, therefore and we have to mesh the two together to gain optimal results.

**What can it do?** As Force XXI matures and becomes the primary tool for the land forces commander, how can it effect the future joint task force commander? In Joint Vision 2010, GEN Shalikashvili, said “The nature of modern warfare demands that we fight as a joint team. This was important yesterday, it is essential today and it will be even more **imperative** tomorrow.”<sup>17</sup> The impact of operating in a joint environment is evident as the Army has deployed twenty-five times as part of a joint operation since 1990. This many deployments signifies the importance of land forces in joint operations and in support of the National Security Strategy of engagement and enlargement. To achieve integration while conducting military operations we must be fully joint: institutionally, organizationally, intellectually and technically.<sup>18</sup> Future commanders must be able to visualize and create the “best fit” of available forces needed to produce the immediate effects and achieve desired results.<sup>19</sup>

What does this all mean for the joint task force commander? As deployments increase and resources decrease there is no doubt where we are headed. Force XXI will act as the spearhead for the land forces commander and will need to be integrated into a joint task force. But before Force XXI can be properly integrated the following three issues that have serious implications regarding a JTF need to be thoroughly explored; (1) doctrine, (2) command and control, and (3) resource interoperability.

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<sup>17</sup> Chairman of the Joint Chiefs of Staff. Joint Vision 2010 no date, introduction.

<sup>18</sup> Ibid. p. 9.

<sup>19</sup> Ibid. p. 9.

## DOCTRINE

The best way to convey the relevance of doctrine to the joint task force commander is with a practical example from Desert Storm.

GEN Schwarzkopf said little as LT. Gen. Boomer and Lt. Gen. Gary E. Luck, commander of the Army's XVIII Corps, explained how they planned to repulse the Iraqis. But as the commanders went through their briefs, it became clear that the command had a problem on its hands. The Marine and Army forces were aligned side by side, but there was a major disconnect between the tactics in the Marine and Army defensive plans.

After the meeting broke up, Luck cornered Boomer. Luck, who held an advanced degree, often played the role of soft-spoken country boy from Kansas. Now, however, Luck was visibly irritated.

"Goddam, Walt. I thought we had this agreement about how to fight. I thought you were going to do a covering force fight."

"Well, I am," Boomer replied in his tidewater drawl.

After about twenty minutes of discussion, it was apparent that the dispute revolved around doctrinal differences about how to conduct a defense.<sup>20</sup>

The interlude between these different land force commanders typifies the difference, or, in some services case, the absence of doctrine. Doctrinal disagreements among the services are nothing new and are hard to change. How does Force XXI impact the joint task force in regards to doctrine?

Force XXI is a classic example of technology driving doctrine. This statement is hard for any soldier to digest since FM 100-5, states "Doctrine is the engine that drives change within our Army".<sup>21</sup> If you look throughout our history, technology has been a driver to

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<sup>20</sup> Michael R Gordon and Bernard E Trainor, LtGen USMC (Ret). The General's War. Little, Brown and Company: Boston, 1995. p. 70.

<sup>21</sup> Headquarters, U.S. Army, Operations, Field Manual (FM) 100-5 Washington, Feb 1993 p.2-3

some of the most innovative doctrinal changes. For example, the telegraph led to distributed operational maneuver in the latter part of the 19th century.<sup>22</sup> The radio led to the coordinated air ground mobile armored combat operations of WWII.<sup>23</sup> **However, regardless of the technological gains, one must use caution when considering that technology cannot solve all of our military problems.** Technology applied without connectivity provided by theoretical concepts will be insufficient to achieve victory over an opponent who has superior operational or tactical concepts, even if he does not possess the most modern weapons.<sup>24</sup>

Maj. Gen. Kern, Commander of 4th Infantry Division (Force XXI), concedes that the Army still has to come up with doctrine and tactics to go with the new technology.<sup>25</sup> This probably will not be resolved until after the division field test in November 1997.

Nonetheless, one can assume that the speed in which information is obtained from this new technology will mean a major overhaul of the battlefield from foxhole to brigade field trains. Speed and precision engagement will reduce our need for a large build-up, thus reducing the footprint that was needed for industrial age forces. The constant theme that is inherent in the new doctrine is adaptability and versatility, a must for the tumultuous world environment.

The joint task force commander must be concerned that his land forces commanders (LANFOR) understands exactly what he wants. As simple as that sounds, the above example amplifies that any minor differences in application or employment of doctrine can have vast differences on the battlefield. This would be fine if the service was going to act independent

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<sup>22</sup> Headquarters, U.S. Army Training and Doctrine Command. Force XXI Operations TRADOC Pamphlet 525-5. Ft Monroe, VA: TRADOC, 1 Aug 1994. Ch 1, p.4

<sup>23</sup> Ibid. Ch 1, p.4

<sup>24</sup> JMO Department. "Methods of Combat Force Employment." Newport, RI: Naval War College, August 1996 p.8

<sup>25</sup> Art Pine, "Military Gears Up, Haltingly for the Future," The Los Angeles Times (Washington Edition), 30 Dec 1996, p.1

of the joint task force or if the land component was primarily made up of one service, which is not true in either situation. As previously mentioned, joint operations are becoming the norm rather than an anomaly, supporting the need for a joint doctrine from which to direct joint operations.

Command of land forces can primarily fall either to the Army or the Marines for execution. If the Marines cannot read into the Army's new Force XXI doctrine a delay in operations could occur or possibly cause a failure in the mission. In the same light, the Joint Force Air Component Commander (JFACC) would have the same difficulty in communicating if he controlled both the Air Force and Army aviation assets. Even though Force XXI is innovative, and clearly gives the US huge technological advantages over its adversary, if the JTF commander can not take advantage of this technology through a synergistic employment of his forces, then it's existence is for naught. Knowledge is power, shared knowledge is powerful.

One recommendation to fix the problem is to shelve the technology after completing tests for a period of one year. A consolidated cell of joint services and civilian agencies then could work with a JTF (drug operations, humanitarian, nation building, etc.) and start writing the doctrine for joint operations. To support this experiment they could use the experience from personnel involved in the testing as well as the after action reports. This process could be effective since all the testing had been accomplished and there will be no "grinding of teeth" on whether or not the doctrine will work.

Once the doctrine is approved, the next step is to start training the leadership. The best method here is to tear down service walls and cross fertilize the young leaders from

lieutenant to commander and private to gunny sergeant. A consolidation of service schools from advanced courses to war colleges with all teaching the same doctrine, and some courses injected for specific service responsibilities, could also be an appropriate course of action.

We must integrate "top down" doctrine throughout the development cycle, while continuing to ensure that joint doctrine fully incorporates the strengths that each service brings to joint warfare.<sup>26</sup> Though some of these recommendations may seem radical and hard to digest, changes need to occur to help usher joint doctrine into the 21st century.

### **COMMAND AND CONTROL**

Any commander, whether in a joint task force or unified command, needs to know the situation as it occurs. Up-to-date information is essential in order to make a decision that could influence the outcome of the battle. The Gulf War offers some practical examples of command and control, both good and bad. The following is another excerpt from *The General's War, The Inside Story of the Conflict in the Gulf*:

Capt. Pollard ordered his LAVs forward to cover Capt. Ross's withdrawal. But as the LAVs rumbled over the desert one of them suddenly exploded into flames, killing four of its crew. The armored vehicle had been destroyed by a TOW antitank missile fired by another LAV in Pollard's company. The first Marine casualties at the battle of Khafji had come at their own hands.<sup>27</sup>

Of the 613 casualties from the fighting in the Gulf War, 24% were killed and 15% wounded by friendly fire. Force XXI will not solve fratricide or every command and control issue on the battlefield. However, it does offer improved situational awareness based on superior

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<sup>26</sup> Chairman of the Joint Chiefs of Staff. Joint Vision 2010 no date p. 29

<sup>27</sup> Michael R Gordon and Bernard E Trainor, LtGen USMC (Ret). The General's War. Little, Brown and Company: Boston, 1995. p. 273.

knowledge of the friendly situation and location, enemy situation and location, and events shaping the overall battlespace.<sup>28</sup> Force XXI will not eliminate the fog and friction, but it can minimize the risk.

Force XXI will enable the commander to see the battlespace prior to engagement reducing the need to consolidate prior to maneuver and, in-turn, lowering the risk of detection by the enemy. Detection of the enemy by sensors from positions with ample cover and concealment and engaging him when necessary allows for an empty battlefield<sup>29</sup>, therefore reducing risk of casualties.

The primary method of maintaining information superiority is the Army Battle Command System (ABCS). ABCS permits commanders at every level to share a common, relevant picture of the battlefield shaved to their level of interest and tailored to their special needs.<sup>30</sup> This common picture will greatly enhance force level dominance by enhancing situational awareness and ensuring rapid, clear communication of orders and intent potentially reducing the confusion, fog, and friction of battle.<sup>31</sup>

Additionally, Force XXI technology is compressing the time and space dimensions of command and control.<sup>32</sup> The introduction of this technology will increase the speed and tempo of future battles forcing commanders to make instantaneous decisions while accepting

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<sup>28</sup> Headquarters, U.S. Army Training and Doctrine Command. Force XXI Operations TRADOC Pamphlet 525-5. Ft Monroe, VA: TRADOC, 1 Aug 1994. Ch 3, p. 16.

<sup>29</sup> describes the changed appearance of the battlefield when soldiers begin dispersing and seeking cover in response to increasing lethality of weapon systems, Headquarters, U.S. Army Training and Doctrine Command. Force XXI Operations TRADOC Pamphlet 525-5. Ft Monroe, VA: TRADOC, 1 Aug 1994. Glossary.

<sup>30</sup> Ibid. Ch 3, p. 3

<sup>31</sup> Ibid. Ch 3, p. 4

<sup>32</sup> James E. Sikes Jr., LTC U.S. Army, "Battle Command and Beyond: Leading at the Speed of Change in the 21st Century", 29 March 1995, available online: <http://204.7.227.75:443/force21/articles/battle/battle11.html>. p. 3.

some degree of uncertainty over further analysis.<sup>33</sup> For example, improved command and control based on fused, all source, real-time intelligence will reduce the need to assemble maneuver formations days and hours in advance.<sup>34</sup>

To combine this technology with the other services many within the high levels of the DoD think that the Army should be the executive agent of all land warfare. This action will consolidate all efforts into one centralized service which will hopefully reduce redundant efforts by other services. As the Army deems necessary they could then task specific land warfare missions to other services that they felt more capable of handling (i.e. mine warfare to the marine corps). This sharing of effort would focus the other services attention on land warfare and surface practical issues through synergistic cooperation.

The services must start thinking beyond the JTF as an ad hoc unit that is organized solely for a special mission and then relegated back to their service units once the mission ends. With the rate at which new technology is being introduced into the services, this joint "think" needs to be exercised daily so it becomes routine. To facilitate this, the established JTF needs to be organized permanently under a specific corps or division to take advantage of the units standing staff and preexisting logistical structure. As the mission arises, the corps commander can then tailor his forces to meet the mission. More importantly all of the land forces (Army, Marines, SOF, PSYOPS) would be consolidated full time reducing the need to familiarize each service with the other.

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<sup>33</sup> Headquarters, U.S. Army Training and Doctrine Command. Force XXI Operations TRADOC Pamphlet 525-5. Ft Monroe, VA: TRADOC, 1 Aug 1994. Ch 3, p. 3.

<sup>34</sup> Chairman of the Joint Chiefs of Staff. Joint Vision 2010 no date p. 19

Force XXI offers the commander some unique challenges to better manage his battlespace. Despite advances in information technology commanders will never have perfect knowledge of the operational situation surrounding them.<sup>35</sup> As information technology becomes integrated throughout our services the hope for the future will be that it can eliminate the fog and friction of battle. In the present the best we have is to minimize it with superior knowledge and rapidly accessible information.

### **RESOURCE INTEROPERABILITY**

Resource interoperability is the ability of the services to cross level equipment, personnel, and material, to successfully complete the mission. This poses the question, why would a JTF commander have to worry about the Marines cross-leveling to Army? The most obvious answer is a reduced logistical tail for each service, thus reducing the overall JTFs sustainment requirement. But of more importance here is the operational factor of time. Considering time as a factor, *Somalia Operations: Lessons Learned* provide an interoperability lesson:

Time spent trying to learn and engineer just the (comparatively) few systems we were associated with during *Restore Hope* could have been better spent providing higher quality, overall service. Money spent on these circuits could have gone a long way to resolving our interoperability problems.<sup>36</sup>

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<sup>35</sup> Headquarters, U.S. Army Training and Doctrine Command. Force XXI Operations TRADOC Pamphlet 525-5. Ft Monroe, VA: TRADOC, 1 Aug 1994. Ch 3, p. 3.

<sup>36</sup> Kenneth Allard, Somalia Operations: Lessons Learned. National Defense University Press, January 1995, p. 82

The value of interoperability to a JTF is invaluable, but very hard to accomplish. However, Force XXI technology integration throughout the services will enable our forces to derive a common understanding of the operational environment.<sup>37</sup>

The hardest interoperability problem to solve is that of equipment, especially information systems. During *Restore Hope* there were at least 10 different data systems, most built around the requirements of a single service, but handling a host of common functions: intelligence, personnel, logistics, finance, etc.<sup>38</sup> Each system brought its own logistical "tail" and required its own lane on the very narrow information highway available to deployed forces.<sup>39</sup>

Not only do you have to have the equipment to communicate with the other services to function as a JTF, you also must have the specific personnel to accompany the equipment. To achieve joint readiness the combatant command or JTF staff must have access to the right technical experts with the right equipment.<sup>40</sup> Having to train the personnel during the mission takes valuable time away from the mission. Therefore, experts who come from the various services must possess the proper mix of skills to bring together the array of available intelligence, surveillance, and reconnaissance (ISR) capabilities.<sup>41</sup>

To date, however, the Army Force XXI effort has not fully incorporated the mechanisms to produce a 21st century Army that is fully joint capable.<sup>42</sup> One step in the

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<sup>37</sup> Gordon R Sullivan, GEN U.S. Army, "A Vision for the Future," Military Review, May-June 1995, p 10

<sup>38</sup> Kenneth Allard, Somalia Operations: Lessons Learned. National Defense University Press, January 1995, p. 82

<sup>39</sup> Ibid. p. 82.

<sup>40</sup> Rash, Charles R., LTC U.S. Army, "Joint Readiness Evaluated," U.S. Army War College, 18 April 1995, p. 10

<sup>41</sup> Ibid. p. 10

<sup>42</sup> Eric R Wildemann, LTC U.S. Army, "Force XXI, The National Strategy and Joint Operation: Are they in Sync?" U.S. Army War College, 2 June 1995, p. 22.

right direction is the Theater Missile Defense Force Projection Tactical Operations Center (TMDFPTOC) fielded in February 1995. This system provides the latest in space-based technology, the first command and control element that seamlessly integrates all theater missile defense (TMD) functions to protect the joint force from the growing ballistic missile threat.<sup>43</sup> The TMDFPTOC harnesses the power of national, theater and tactical sensors and enables the JTF and land component commanders to see the battlefield in real time. Furthermore, it synchronizes TMD operations-air, land, sea, and special operations-faster and more effectively than ever before, and in a compact, easily deployable format.<sup>44</sup>

The best way to remedy interoperability difficulties in the short term is by hard working liaison officers (LNOs) from other services working in conjunction with Force XXI ensuring that all their needs are being surfaced during the initial tests. This is currently being done, but needs to be reinforced from the service chief level.

The long term solution is having the Joint Requirements Oversight Council (JROC) spearhead the Joint Force XXI initiative. Currently the Joint Venture cell is a little prong from the main effort of Force XXI and doesn't function in a joint capacity. The JROC, which is chaired by the Vice Chairman of the Joint Chiefs of Staff, could focus the services on the mission and allocate the funding for needed technology without service redundancy.

Force XXI is not emphasizing information age technology, as many think, because of budget constraints that preclude investment in new major weapon systems.<sup>45</sup> Rather, information age technology is the key to a vast improvement in effectiveness.<sup>46</sup>

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<sup>43</sup> Gordon R Sullivan, GEN U.S. Army, "A Vision for the Future," Military Review, May-June 1995, p 12.

<sup>44</sup> Ibid. p. 12

<sup>45</sup> Ibid. p. 13

<sup>46</sup> Ibid. p. 13

The opportunity to cross-level the forces currently exists with Force XXI. The other services need to surrender their service hubris and combine efforts towards information systems that are interoperable. With the rapid evolution of commercially developed information age technology it won't be long before it is available to potential enemies.<sup>47</sup> Therefore, it is imperative that services act quickly to combine efforts to obtain maximum results from Force XXI.

## **CONCLUSION**

Force XXI is part of the Army's answer in how to deal with a changing world environment. Information age technology will allow the US a decided advantage over potential enemies. If the Army is the sole consumer of this technology it will become a liability rather than an asset. The four services need to be in concert with one another during a time of uncertainty to insure victory in the execution of future joint operations and for the effective defense of United States national interests.<sup>48</sup> Such Force XXI ideas as battlespace, quick reading battle command through real-time information sharing, and simultaneous attack cannot be realized in practice without **pervasive jointness**.<sup>49</sup>

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<sup>47</sup> Ibid. p. 12

<sup>48</sup> Eric R Wildemann, LTC U.S. Army, "Force XXI, The National Strategy and Joint Operation: Are they in Sync?" U.S. Army War College, 2 June 1995, p. 20.

<sup>49</sup> John H. Cushman, LTC U.S. Army, "Make it Joint Force XXI," Military Review, March-April 1995, p. 4.

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